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ADMINISTRATION REPORT

OF THE

DIRECTOR OF AGRICULTURE,

FOR THE YEAR

1940.

GEORGETOWN, DEMERARA:
PRINTERS TO THE GOVERNMENT OF BRITISH GUIANA.
"THE ARGOSY" COMPANY, LIMITED.
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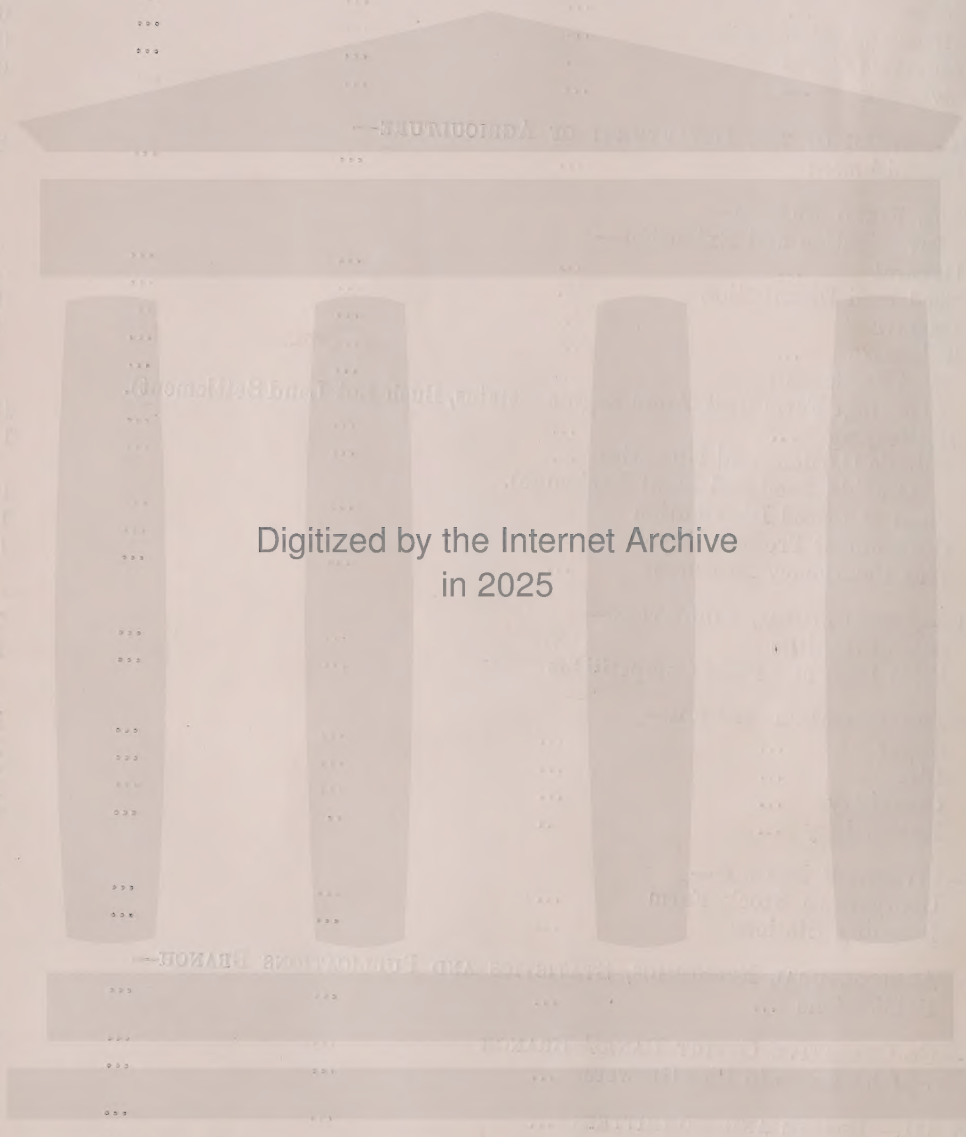

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DEPARTMENT OF AGRICULTURE.

ADMINISTRATION REPORT OF THE DIRECTOR OF AGRICULTURE FOR 1940.

SECTION I.

AGRICULTURE IN WAR TIME.

The year 1940 will long be remembered in agricultural circles for several reasons, among which may be mentioned :—

(1) The Empire was in the throes of a war which had broken out, in spite of all efforts for peace by our statesmen, during the later months of the previous year ;

(2) the effect of the conflict on domestic policies especially in regard to the necessity of increasing supplies of locally-grown food, both plant and animal products—the farmer was called upon to produce more, particularly foodstuffs, for the replacement of goods from abroad brought in ships and paid for in exchange that could be used to better advantage ;

(3) the coincidence with the above of the Royal Commission's recommendations in which the need, even under normal conditions, for a greater self-sufficiency policy was stressed ;

(4) the continuance of the drought of the previous year to frustrate some of our main hopes and aspirations, notably in connection with rice production.

2. It will be recalled that a " Food Production Committee," with the Director of Agriculture as Chairman, was appointed by Government in September, 1939. The chief purpose of this Committee was " to study the lists of normal imports of foodstuffs into the Colony and advise on the extent to which locally-grown foodstuffs can be substituted for them, if necessary ; to give advice as to the steps to be taken to ensure that such foodstuffs should be grown locally in sufficient quantities to supply the local demand in the event of failure to obtain imported foodstuffs."

3. There were two distinct but related problems to be tackled. The consumer was to give more thought to local products in the dietary ; the producer was to increase the quantity and variation of his output with the assurance that all possible help would be offered him in the marketing of his produce. This presaged prices reasonable to the former and encouraging to the latter. With this object in view under the provisions of the Emergency Powers (Defence) Act, 1939, the Defence (Rice Control) Regulations were enacted and the Rice Marketing Board, which previously concerned itself with the export trade only, was merged into a single purchasing and selling organisation for the orderly disposal of all rice ; next, the Government Produce Depôt was established to provide similar assistance for ground provisions and vegetables.

4. Livestock, too, has received attention. Generally speaking, the Colony is well supplied with fresh meat at reasonbale prices, but there are considerable importations of processed meats in various forms. Arrangements were made for a meat expert to visit the Colony to advise on and demonstrate the preparation of meat products. Through the courtesy of the Department of Agriculture, Ottawa, Mr. T. Olsen of Wellington Packers, Guelph, Ontario, arrived here in January, 1940, and the results of his visit were soon apparent. The quality of locally produced ham and bacon improved and there was an increasing demand. The rise in consumption led to better prices to the producer and to a system of Government grading of pigs. Meantime, too, the Department had undertaken feeding trials which indicated lines along which balanced rations could be prepared from local feedstuffs at an economic price. The success obtained with the Canadian Berk-

shire breed, better appreciation of feed requirements by those interested and the attractive prices ruling, are responsible for the expansion taking place in the pig industry. There is, of course, still room for considerable improvement in pig rearing generally.

5. The problems of the cattle industry—chiefly breeding and feeding—were accentuated by the persistent dry weather which caused a shortage of feed supplies. Pastures, already poor for the most part, presented a bare appearance during the greater part of the year. Nevertheless, there are signs that the industry is endeavouring with the means at its disposal to effect improvements in both quantity and quality. In the latter connection particularly, a wide field presents itself. If resources were available to provide grade animals for distribution in greater number, together with improved drainage and irrigation facilities, the results which could be achieved would well warrant the undertaking. In regard to the milk breeds, there has in recent years been an appreciable dissemination of Holstein blood, especially on some sugar estates and in village and town areas where the market for fresh milk is within easy reach and prices good. Service units supplied with Holstein and Red Poll bulls from the Department have made some contribution in this connection and in improving the strain of peasant cattle. A pressing problem affecting beef production is the improvement of grazing conditions on the intermediate savannahs. At year's end, plans were under consideration for the establishment of a Livestock Experimental Station on the Ebini Downs, Berbice River. It is intended to make investigations on the spot of the mineral deficiency and other aspects of an area which, if beneficially occupied, would make available about 2,000 square miles of savannah land for grazing. The Department has assumed control of the cattle trail leading to these intermediate savannahs from the more remote hinterland savannahs of the Rupununi. Meanwhile, there are other indications of progress, such as trial shipments of frozen meat to Trinidad.

6. While interest in poultry has increased, the uncertainty of shipping arrangements in particular has caused some disruption in the export trade, chiefly to Trinidad, during the year. It is felt, however, that there is a supply of birds and eggs available to permit of a larger volume of trade than at present, but considerable organisation is necessary together with cold storage facilities which would allow poultry products being held between shipments. The breeding unit at the Farm has been extended—the number of eggs produced was, compared with 1937, 65 per cent. higher in 1938, 136 per cent. higher in 1939 and 301 per cent. higher in 1940. There is still need for further expansion and enquiries leading to the possible establishment of large scale incubation-hatchery equipment are in progress.

7. Because of its importance as a food crop, both locally and in the neighbouring Colonies, a substantial part of the Department's activities was directed towards the extension of rice. Additional supplies of seed were distributed to make good any possible shortage due to crop failure the previous year and for planting up new areas. Certain sugar estates made available additional land for rice growing, while the Government estates of Anna Regina *cum annexis* on the Essequibo Coast were reconditioned and rice cultivation extended. Special credit facilities were offered through the Co-operative Credit Banks, loans being made available not only for seed but also for expenses at reaping time, while the higher prices for padi which were fixed in advance were an incentive to increased activity generally in the industry. Unfortunately, the weather proved a limiting factor and, for the second successive year, unusually dry conditions prevailed. Loss, especially in those areas like Berbice and the upper East Coast, Demerara, where irrigation facilities are inadequate, was particularly heavy. This shortage in the rice crop had its repercussions. On account of unreliability of supplies from Burma, British Guiana had found it necessary to make commitments in advance on the Caribbean Markets and when a shortage was foreseen there were attempts at hoarding by some producers and others holding stocks. However, firm steps were taken by the Board to avert any serious dislocation. The situation too was eased by

the response to the " Grow More Food Campaign " which was especially marked in the case of ground provision crops.

8. A great deal of attention was directed towards the expansion of peas and beans—five tons of black eye peas alone were distributed by the Department. A scheme for storing and orderly marketing of the crop had been drawn up and funds were provided by the Legislature for the purpose, but the unfavourable weather conditions resulted in poor yields in many areas and it was found unnecessary eventually to operate the scheme. Nevertheless, fair supplies entered directly into home consumption from small lot cultivations.

9. Other activities deserving of special mention centred on the inauguration and development of allotment schemes, of which there are two large ones for Georgetown and New Amsterdam respectively. To ensure effective control, allotment committees were appointed and these worked harmoniously with the Department which was represented on them and which was responsible for the advisory work in connection with the schemes, the supplying of planting material, together with the establishment of nurseries and demonstration plots. Both schemes are in full operation and have proved their usefulness. There has also been increased interest in home gardening and considerable quantities of seed, seedlings, cuttings, etc., were freely distributed.

10. As indicated above, there was a substantial expansion in the production of ground provisions, particularly root crops; this increase was estimated to be as high as 25 per cent. in some areas and was one of the reasons responsible for the creation of the Government Produce Depôt. The Depôt began operations on November 1. It serves primarily as a centre for the handling of produce from outlying districts, thus saving farmers from high agents' charges at the same time providing consumers with a convenient and fair-priced shopping locale.

11. Reference has already been made to the drought and the effect on food crops. It also had its effect on the sugar industry which registered a 12 per cent. decrease in total production with an appreciable decline in yield per acre during the period. Extensive areas in rice were planted and not reaped, while livestock and minor industries received setbacks which it is not easy to measure. Nevertheless the year closed on an optimistic note. The general feeling seemed to be that, given favourable weather and other conditions, there was now taking place expansion in livestock and agricultural industries which would compensate for the experimental and spade work of recent years.

12. In the efforts discussed above, concerning which further details are given under appropriate heads in the report, the administration, research and extension staffs of the Department alike have been increasingly active and the co-operation of the farming community must be specially commended. In addition, the Department has collaborated fully with various organisations, notably the Rice Marketing Board, the Copra Brokers' Board, the Food Production and Allotment Committees, the Price Control Advisory Committee and the Supplies Control Committee.

Weather Conditions.

13. Details of the meteorological data obtained during the year are given in the Annual Meteorological Report of the Department. The year was abnormally dry again and the total rainfall recorded at the Botanic Gardens, Georgetown, was 69.29, inches which was 21.43 inches below the average of 90.72 inches for the past 60 years 1880-1939.

14. The mean rainfall for 1940 on the coastal area of the three counties is as follows:—

Berbice ...	...55.49 inches.
Demerara ...	...67.30 inches.
Essequibo ...	...73.55 inches.

The means for 1890-1939 of the counties was as under—

Berbice (1890-1939)	... 80.89
Demerara (1890-1939)	... 92.31
Essequibo (1890-1939)	...100.61

AGRICULTURAL INDUSTRIES.

Sugar.

15. The sugar crop for 1940 amounted to 167,645 tons, a decrease on the 1939 crop of 189,245 tons by 21,600 tons. Of the 70,622 acres under cane, 63,692 acres were reaped during the year—62,344 on the sugar estates and 1,348 from farmers' canes. The output from the latter was 2,876 tons of sugar. The general average yield of sugar per English acre was 2.63 tons and on sugar estates 2.64 tons.

16. Table I. gives the returns of cane acreages reaped, production of sugar, yield per acre and rum produced in 1939 and 1940, and Table II. gives the exports of sugar, rum, molasses and molascuit for 1939 and 1940.

17. Of the areas allocated to cane, 37,506 acres are under P.O.J. 2878 ; 24,162 acres under Diamond 10 and 1,804 acres under D.625.

TABLE I.

CANE ACREAGES REAPED, PRODUCTION OF SUGAR, YIELD PER ACRE, AND RUM PRODUCED IN BRITISH GUIANA DURING 1939 AND 1940.

Year.	Area Reaped (inclusive of farmers' canes)—English Acres,			Sugar Produced (inclusive of farmers' canes)—tons.			Yield per acre—tons.			Rum Produced—Proof Gallons.		
	Berbice.	Demerara.	Total: Colony.	Berbice.	Demerara.	Total: Colony.	Berbice.	Demerara.	Total: Colony.	Berbice.	Demerara.	Total: Colony.
1939 ...	22,918	39,086	62,004	76,893	118,352	189 245	3.35	3.03	3.05	534,281	888,290	1,422,571
1940 ...	24,497	39,195	63,692	70,425	97,220	167,645	2.87	2.48	2.63	1,063,263	1,021,052	2,084,315

TABLE II.

EXPORTS OF SUGAR, RUM, MOLASSES AND MOLASCUIT, 1939 AND 1940.

Year.	Sugar.			Rum.		Molasses.		Molascuit.	
	Tons.	Value in $	Value per ton in $	Proof Gallons.	Value in $	Gallons.	Value in $	Tons.	Value in $
1939 ...	179,103	8,134,190	45.9	978 817	430,114	5,360,270	279,318	295	5,034
1940 ...	142,714	7,130,274	49.96	1,824,450	743,975	3,719,531	191,761	560	10,332

Rice.

18. The acreage under rice during 1940 was 57,859 acres, but including the spring crop, the areas actually reaped was 60,910 acres. The yield was returned at 51,580 tons padi which is equivalent to 30,948 tons rice.

19. There was a considerable increase in the area under rice during the year as the result of the better prices offering and the special effort of the "Grow More Food Campaign". It was estimated that some 9,000 acres more were grown than the previous year. Unfortunately, the end of the year rains failed again and, in many areas, no crop was obtained ; in fact, it was only on the West Demerara and Essequebo districts that the area reaped approximated the area planted. The eventual outcome was a short Colony crop, the area reaped being far below that sown.

20. Reference has already been made to the re-organisation of the Rice Marketing Board, originally created to control the export of rice. Under the Emergency Powers Defence legislation, the Rice Marketing Board became a central organisation, controlling the commodity both for domestic consumption (except limited amounts retained by the growers for home use) and for export. Regulations

make it compulsory for the miller to deliver to the Board all rice milled and payment is made through the miller at prices previously fixed and published for the different grades, as follows:—

Grade.			Price.
Super	...	...	$ 5 00
Extra No. 1	...	...	4 60
No. 1	...	...	4 20
Extra No. 2	...	...	3 90
No. 2	...	...	3 60
No. 3	...	...	3 40
Super Broken	...	...	3 00
Broken	...	...	2 50
White A	...	...	4 60
White B	...	...	3 80
White Broken	...	...	2 50

All per bag of 180 lbs. gross delivered at the Board's Georgetown warehouse. At the same time a minimum price of $1.20 per bag of 140 lbs. was fixed for padi, higher grades obtaining better prices.

21. The large number of generally inefficient rice mills is responsible for the excessive number of rice grades handled and at the same time prevents a complete system of padi grades being adopted. For sale purposes, the number of grades is reduced by blending.

22. Table III. gives the returns of acreages reaped in the three counties, production and exports during 1939 and 1940.

Table III.

RICE ACREAGES, PRODUCTION AND EXPORTS, 1939 AND 1940.

Year.	Area Reaped (Spring and Autumn Crops) English Acres.					Yields.		Exports.				
			Essequibo.		British Guiana total acreage (reaped).			Rice.			Padi.	
	Berbice.	Demerara.	Mainland.	Islands.		Padi tons.	Rice tons 60% yield of cleaned Rice from Padi).	Tons.	Total Value in dollars.	Value per ton in dollars.	lb.	Total Value in dollars.
1939 ...	30,843	21,706	8,382	11,201	72,132	67,514	40,383	12,501	582,547	46.6	11,738	145
1940 ...	20,448	22,155	8,416	9,891	60,910	51,580	30,948	11,691	708,814	60 63	7,980	82

Coconuts.

23. The area under coconuts in 1940 was 20,504 acres. From many points of view the year was not a happy one in the coconut industry. The dry weather lasting over such a long period had the effect of reducing production in some instances by as much as 40 per cent. in the number of nuts and 25 per cent. in size. In the early months of the year relatively large shipments of coconut products were made and this, together with the short crop, made it necessary towards the end of the year to import limited quan tities of copra and deodorised edible coconut oil to meet domestic consumption. This s hortage received the careful attention of Government and the Copra Brokers' Board.

24. The effects of the short crop also raised difficulties in connection with pig-feeding in some areas where coconut poonac forms an important feedstuff.

25. The price of copra for export to the United Kingdom was fixed by the Imperial Government at £13.10s. per ton.

26. The exports were as follows:—

Coconuts (No.)	...	325,328 valued at $3,264.
Copra	...	1,167 tons valued at $74,496.
Coconut Oil	...	14,980 gallons valued at $7,105.

Coffee.

27. The area under coffee in 1940 was 2,575 acres of the Liberian variety. Export sales became so restricted that production is now viewed purely in regard to domestic demand. Low prices over a period of years have discouraged any but essential field operations with a consequent reduction in output. Surplus stocks were reduced, prices rose and remained at a comparatively high level, the average for the year being approximately eight cents per pound for raw beans.

Citrus and Other Fruits.

28. The area under grapefruit, oranges and other fruit was 1,500 acres, and that under limes was returned at 948 acres. The Department's propagation work has been maintained and the number of budded, grafted and other plants of selected varieties has been steadily increased.

29. The exports were as follows:—

Concentrated lime juice	...2,443 gallons	valued at $871
Essential oil of limes	... 618 „	„ „ $22,887

Vegetable Crops.

30. The area under mixed provision crops was returned as 14,626 acres and under corn 712 acres. There has been increased interest in the production of provision crops and vegetables since the war, but actual acreages have tended to fluctuate due to weather conditions. In some areas cultivation has been greatly increased. To encourage and help this movement the Department devoted a good deal of attention to the collection and distribution of planting material. In consequence full advantage could be taken of the rains, even though they were light and below normal. Work in connection with the home preparation of some of these foods was also undertaken, *e.g.*, hand-milling of corn, splitting of peas, production of tapioca. Further reference to food crop activities will be found in paragraphs 71-77.

31. Previous reports have recorded efforts made to encourage expansion of the export trade in plantains, notably to Trinidad, where Venezuelan competition is keen. War conditions and exchange considerations have now helped and both in 1939 and 1940 exports were higher than in either of the previous two years.

32. In connection with truck garden crops, the Department imported a considerable amount of seed of the varieties which in previous trials had given satisfactory results under local conditions and an extensive distribution was made, both of seed and seedlings. Although these "kitchen garden" crops were affected by the dry weather, they were on the whole satisfactorily maintained.

Livestock.

33. The year has been characterised by a long period of droughty weather, a scarcity of concentrates for feeding, greater demands for stock on local and export markets and the continued rise in the price of livestock. Some progress is being made with livestock improvement as more information is now available on feeding, breeding and stock management, together with a greater supply of breeding stock from the Georgetown Stock Farm, and grade bulls from the agistment area at La Belle Alliance, Essequibo.

34. There is a good demand for dairy cattle, for grade cows and heifers of the Holstein and Guernsey grades. The improvement of dairy cattle is being extended as facilities permit by the use of Holstein bulls whose progeny are hardier and more adapted to the environment than the Guernsey. A few grade Red Poll bulls have just begun service, but it is too early to obtain information on their performance. Further extension of the Georgetown Stock Farm is now an urgent matter if the increasing demands for improved stock are to be met, and particularly in view of the encouragement of more intensive systems of management on the coastal belt.

35. Although a much improved type of pig is now seen in the slaughter house, through the use of the Canadian Berkshire breed, the feeding methods need to be greatly improved to produce larger numbers of better quality animals suitable for bacon purposes. Good breeding and feeding are the requisites for first quality pigs and with the advance in prices from 7 to 11½ cents per pound dressed weight, there is every incentive to farmers to build up a profitable bacon industry. Improved prices have been effected from the former low levels of previous years through the valuable report submitted on the meat industry by Mr. Thomas Olsen, of Wellington Packers, Guelph, Ontario, who visited the Colony to report and advise on the establishment of a local bacon industry. The introduction of hog-grading was also a considerable fillip to pig-rearing. If farmers will avail themselves of this opportunity and co-operate with the Department, a marked increase in production of better quality pigs should stop importation of bacon and ham within a few years. Grading is done by the Government Veterinary Surgeon.

36. *Poultry.*—Formerly, two of the greatest handicaps to the development of poultry were the high prices of imported feeds and lack of markets. Both of these disadvantages are being overcome, through the greater use of local feeding rations and better prices on the local and export markets. A wider distribution of pure-bred cockerels from the Stock Farm to grade up the birds in the country districts, is showing its effect in an improvement in their progeny. The future of poultry rearing holds good promise for development but there must be close co-operation especially in the marketing of eggs and birds for the export markets.

37. The livestock returns for 1940 are as under :—

Cattle	...	...	134,723
Horses	...	...	2,831
Buffaloes	...	...	138
Goats	...	...	11,711
Mules	...	...	1,444
Asses	...	...	6,921
Sheep	...	...	32,762
Swine	...	...	24,143

38. *Exports.*—There is a valuable export market with the British West Indies, for every class of livestock this Colony can produce, but there must be an improvement in quality and uniformity. The exports of cattle have been somewhat curtailed but there can be no considerable increase until large areas of new grazing lands can be economically stocked and properly managed. There are no handicaps to increased production of pigs, poultry and eggs, but in the case of poultry and eggs, co-operative marketing is essential to increased production. The services of a marketing officer are greatly needed in this connection.

39. The following are the exports :—

Year.	Cattle No.	Pigs No.	Poultry Value $.	Eggs Value $.
1939 ...	982	925	5,989	1,848
1940 ...	435	751	4,007	180

Shipments of frozen meat were made during the year, namely, 27,332 lb. beef and 22,266 lb. pork.

40. *Animal Health.*—There were no outbreaks of any notifiable diseases this year. Losses among livestock were due chiefly to drought conditions—lack of grazing and drinking water on many of the overcrowded pastures, and prevalence of cattle ticks. A virulent outbreak of tick fever occurred due no doubt to the very dry weather and possibly a more virulent form of organism.

41. Very little tuberculin testing of dairy cattle is practised. Three reports were received of deaths among cattle from pastures on the East Coast and East Bank from anaplasmosis and piroplasmosis. Eight animals were seen and treated with Sodi Cacodylate and responded to treatment.

42. At the Stock Farm three cows died and three animals recovered only when Acaprin was used. It is the first time that animals have been lost on the Stock Farm from tick fever and it is presumed that a virulent type might have been introduced by cattle brought in for breeding purposes.

SECTION II.

WORK OF THE DEPARTMENT OF AGRICULTURE.

Establishment.

43. *Leave.*—The following officers were on leave during the year:—

Professor J. S. Dash, Director of Agriculture, from April 26, 1940, to November 14, 1940. He resumed duty on November 25, 1940.

Mr. E. B. Martyn, Botanist-Plant Pathologist, from July 1, 1940, to November 28, 1940, prior to assumption of duty in Jamaica.

Miss S. Lord, Typist-Clerk, from September 17, 1940, to December 27, 1940.

Mr. D. D. Blackman, Meteorological Observer, from June 13, 1940, to December 12, 1940.

Miss M. Cheong, Typist-Clerk, from December 9, 1940, to March 31, 1941.

Mr. E. G. Benson, Agricultural Superintendent, returned to the Colony from leave of absence on March 13, 1940.

44. Consequent on the absence of the Director, Mr. L. D. Cleare, Entomologist, who had been acting as Deputy Director since January 11, 1939, was appointed to act as Director of Agriculture, and Dr. D. W. Duthie, Chemist, to act as Deputy Director

45. *Retirement.*—Mr. H. B. France, Agricultural Assistant, retired on September 29, 1940, on the cessation of his leave of absence.

46. *Transfer and Secondments.*—Mr. E. B. Martyn, Botanist-Plant Pathologist, was transferred to Jamaica as Economic Botanist. Mr. Martyn left the Colony on leave of absence prior to assumption of duty in Jamaica.

47. Mr. E. G. Benson, Agricultural Superintendent, was seconded as Rice Grading Officer to the Rice Grading Office as from October 1, 1940.

48. Mr. L. A. Forte, Field Assistant, Sugar Experiment Station, was seconded as Assistant Manager of the Government Produce Depot as from November 1, 1940.

A.—THE FIELD BRANCH.

I.—INVESTIGATION AND EXTENSION.

General.

49. Experiment Stations, sub-stations, nurseries, observation and multiplication plots were maintained both at Headquarters and in the districts. Nurseries had to be extended and the amount of advisory work increased considerably as a result of the "Grow More Food Campaign." Organisation of padi seed supplies and other planting material was an important feature of the work of the District Officers. There was also an increase in Co-operative Credit Bank activities.

Seed Padi Distribution.

50. The following table gives particulars of seed padi distributed during the year under review :—

District.		Seed Padi. (Departmental stocks) Bags of 140 lb.		
Berbice	...	281	bags	
East Demerara	...	214	,,	
West Demerara	...	122	,,	
East Bank, Demerara	...	60	,,	
Essequibo and Islands	...	783	,,	1,460

51. In addition, 1,399 bags (202,690 lb.) of selected seed padi were purchased and distributed to growers under agreements for repaymennt through the Co-operative Credit Banks. Funds were provided for this under War Emergency Measures to render assistance in those areas hard hit by the drought.

Cassava.

52. Efforts to obtain practical information on various food and other minor crops, both as regards suitability to local conditions and yields, have been continued. Cassava, which is an important root crop, has received special attention. During 1939 a stage was reached in the collection and study of local varieties as to justify a selection from these for comparative trials on a suitable site. Middlesex, No. 2 Canals Polder, was chosen and a comprehensive trial with eight varieties—both Bitter and Sweet was laid down. Harvesting took place in 1940 and the results were reported in detail in the *Farm Journal*. Briefly, the average yield from the Bitter varieties was 5.6 tons per acre and from the Sweet 4.6 tons. These yields are below those of countries associated with Cassava cultivation for industrial purposes, but are considered a fair indication generally of what may be expected under local soil conditions.

Tobacco.

53. The Tobacco Officer visited the coastal lands, the north West District, the Rupununi, the intermediate savannahs near the Francois Mission, Mahaica River, and the areas adjacent to Waranama on the Berbice River. The possibilities of these areas have been assessed and a report on each area furnished.

54. Under a development scheme financed by the Government, an experimental plot and training centre was established at La Bonne Mere, Mahaica, and nine young men were given a season's training in bright flue-cured Virginian and dark fire-cured Black tobacco.

55. The Tobacco Officer has prepared a bulletin on the cultivation and curing of Virginia and fire-cured Black Tobacco, which will be published shortly.

56. Among the difficulties experienced by this officer has been the lack of interest displayed by farmers in this exacting but not laborious crop, possibly because it differs so greatly from other crops grown in the country.

Land Settlement.

57. *Toevlugt Farm Unit.*—This was maintained along the lines described in previous reports. A thatched-roof cottage was erected for the foreman in charge. In spite of the drought, the cultivations are now well established and it is proposed to add a livestock unit as soon as suitable stock are available.

58. *Anna Regina Estates.*—These estates, which had been leased for the previous five years, were taken over by the Department on January 1, 1940, as a part of the programme for increasing local production of foodstuffs. A Field Manager was appointed and during the first half of the year the irrigation and

drainage system was completely overhauled with the aid of a grant of $25,000 made available from the Development Trust Fund.

59. At the Autumn rice crop, 1,104 acres were planted by 445 tenant farmers. The yield of padi was estimated to be 27,600 bags (150 lb. nett) of which 20,829 were taken over by the British Guiana Rice Marketing Board at a price of $1.96 per bag (150 lb. nett). The amount paid out to the tenants was $40,824.84. The working account of the estates for the year showed total disbursements $9,414.21 while receipts totalled $11,777.78. In spite of the drought and the loss of the Spring crop the output of padi was more than double the 1939 figure.

60. The capital expenditure during this first year of operation not only made possible considerable improvements in the condition of the properties but provided substantial cash earnings by the cultivators. This, together with the good prices realized for padi, enabled rents and advances to be collected, at the same time enhancing the economic position of the tenants themselves. The housing problem still remains to be solved.

61. *Bush Lot Land Settlement.*—This Scheme has also had another successful year. The following figures will serve to indicate the progress made : —

	1938.	1939.	1940.
Area planted Autumn padi crop (acres)	175	186	246
Quantity of padi sold (bags of 150 lb.)	2,124	2,907	4,321
Amount paid to settlers	$ 2,846.16	$ 5,523.30	$ 8,469.16
Rents collected	$ 766.19	$ 1,586.75	$ 1,800.95
Advances and interest refunded	$ 869.01	$ 1,526.50	$ 668.17
Number of resident settlers indebted to Government	34	12	5

62. The kitchen gardens and provision farms were maintained but the expansion of these activities was hindered by the extremely dry weather that prevailed throughout most of the year.

63. The settlement now comprises 52 families and has a total population of 178 souls.

64. *Settlement Surveys.*—An important agricultural survey was carried out of the Vergenoegen-Greenwich Park area, Lower Essequibo, and a report on the possibilities submitted to Government.

Beekeeping.

65. During the year a good deal of attention was directed to the establishment of apiaries in out-districts which appeared to merit development. There are certain localities like the Pomeroon River, the Upper Essequibo Coast, West Coast, Berbice, and East Coast, Demerara, where Courida (*Avicennia nitida*) the Colony's chief honey plant grows in extensive and pure stands. It is in such areas that the extension of apiaries is being encouraged.

66. The honey crop for the year was a very short one and this was attributed by beekeepers to the unusually dry weather.

67. Visits by the apiary assistant were made to the country districts somewhat more frequently than in previous years and a good deal of appreciation of this advisory service has been expressed by country beekeepers. 154 queens were distributed from the Department's Demonstration Apiary.

Botanic Gardens and Nurseries.

68. The drought which set in last year continued also in the present year. This had a marked effect on the Botanic Gardens and a number of trees and palms were lost as the result. In spite of this, the Gardens and Nurseries were well maintained and some progress made in the general conditions. There was a good demand for economic plants.

69. *Orchids.*—Through the generosity and public spiritedness of the executors and legatees of the late Frank Albouy Conyers, during the year the Botanic Gardens received the large and valuable collection of orchids which this gentleman had made. The terms of the gift were that the orchids were to be exhibited "for the enjoyment of the public" and designated the "Conyers Collection." In accordance with this, a special stand was erected for the collection in the Orchid House. The collection, which comprises some 600 plants, mostly in pots, includes many hybrid forms and is considered perhaps the best general collection in the Colony.

70. *Seed and Plant Exchange.*—The usual work under this head has been maintained. Seed and plants, both economic and ornamental, are received from various countries and there is a corresponding despatch of material to Gardens and Institutions abroad. In this way new additions to the local Gardens and Stations are regularly made.

Plant and Seed Distribution.

71. Activities under this head were accentuated both as a result of the "Grow More Food Campaign" and the effects of the persistent drought which made planting material in some districts scarce. Nursery work was increased and additional funds were provided under War Emergency Measures.

72. The following is a list of the more important distributions;—

Seed Padi ...	...407,090 lb.
Black Eye Peas ...	... 11,500 lb.
Miscellaneous Peas and Beans	... 241 lb.
Imported Vegetable Seed	... 175 lb.
Onion seed ...	... 51 lb.
Seedlings of various vegetables (No.)	... 26,496
Eschallot ...	... 62½ lb.
Jerusalem Artichokes	... 144 lb.
Banana Suckers (No.)	... 2,156
Plantain Suckers (No.)	... 10,099
Sweet Potato Cuttings (No.)	... 30,159
„ „ Tubers	... 1,641 lb.
Cassava Sticks (No.)	... 25,889
Tannias and Dasheen	... 306 lb.
Eddoes ...	... 2,262 lb.
Yams ...	... 392 lb.
Corn ...	... 547 lb.
Fruit Plants (Mangoes, Citrus, Papaw, Pears, etc.) (No.)	... 3,645

Government Produce Depôt.

73. The Depôt began operations on November 1 and Mr. E. M. Morgan, Assistant Agricultural Superintendent, was appointed to the duties of Supervisor, other staff being secured to assist. A sum of $5,000 was voted by the Legislative Council for the construction of a suitable building which was erected on a site in the vicinity of the Stabroek Market, together with $960 for initial operating charges. The trading transactions are being financed by a revolving fund of $4,000. Owing to the short period the Depôt was operating before the close of the year, it is not possible to make any statement as to its working but a full account of operations will be given in due course.

War Emergency Measures.

74. The following sums were allocated to the Department to provide additional services, following the outbreak of War :—

Particulars.	1939.		1940.	
	Allocation.	Expenditure.	Allocation.	Expenditure.
(a) General—				
Visit of Mr. Olsen, (Meat Expert) ...	$ 570.53	$ 570.53	$ 500.00	$ 483.14
Black Eye Peas Seed ...	527.99	527.99	800.00	828.57
Flour Substitutes Investigation ...	19.57	19.57	...	...
Nurseries and Planting Material ...	166.42	166.42	1,200.00	1,315.57
Water Wheels, Pea Splitters, etc. ...	...	...	200.00	6.38
Maize Mills ...	...	...	200.00	84.04
Purchase of Seed Padi ...	...	...	2,600.00	2,488.41
Miscellaneous ...	...	...	400.00	348.63
	$ 1,284.51	$ 1,284.51	$ 5,900.00	$ 5,554.74
(b) Pulse Storage Scheme ...	...	...	$ 8,000.00	$ 406.20

75. The above figures, it will be noted, do not include expenditure for re-conditioning work and extension of padi cultivation under the Anna Regina scheme, met by grant from the Development Trust Fund ; for special loans to Co-operative Credit Banks ; for establishment and operating of the Government Produce Depôt. Such measures are discussed separately under their respective heads, while the whole position has been reviewed under "Agriculture in War Time". The Food Production Committee, comprising representative members of the Advisory Board of Agriculture, together with certain co-opted members, rendered valuable aid in the general formulation of plans. A list of the members of this Committee was published in the *Farm Journal* and the results of their deliberations, together with progress reports, have also been noted therein, besides being forwarded to Government.

76. One of the first questions to be tackled on the outbreak of war was the possibility of replacing part of the wheat-flour in the loaf, by local substitutes, notably rice-flour. Eventually, it was found that although partial replacement was highly successful to the extent of 25 per cent., unfortunately, it did not prove an economic proposition, and supplies of wheat-flour continued to be received at reasonable prices.

77. In connection with the pulse storage scheme, it will be recalled that this did not materialise as was expected, on account of the drought. Supplies were never at any time large enough to be withheld from the market and stored. A good deal of the crop entered directly into home consumption and it was thus difficult to estimate the output.

II.—AGRICULTURAL EDUCATION.

School Gardens.

78. There are twenty-nine school gardens registered by the Department :—

Berbice	...	12
East Demerara	...	5
Georgetown	...	1
West Demerara	...	5
Essequibo (Mainland)	...	4
,, (Islands)	...	2

Seeds and complete sets of tools and/or replacements were issued to each garden.

79. In consultation with the Department of Education a scheme was drawn up to increase the number of these gardens which is to come into operation in 1941.

Field Days and Field Competitions.

80. No field days or competitions were held during the year. The staff was concerned with other forms of educational work in connection with the "Grow More Food Campaign."

B.— THE RESEARCH BRANCH.

Sugar.

81. The sub-normal rainfall for ten months of 1940 following on the severe drought of 1939 considerably hampered the breeding programme as well as the selection and experimental work. The adverse effects of this long spell of abnormally dry weather will be manifested over a long period.

82. Nine cane varieties were imported during the year through the Central Quarantine Station, Trinidad, viz :—

B. 3371, B. 3419, B. 3521, B. 3540, B. 37157,
B. 37161, B 37175, B. 37181, B. 37194.

83. Cane cuttings of the following varieties were sent to the Ministry of Agriculture, Egypt :—

Diamond 10, D. 419/33, D. 14/34, D. 166/34, D. 185/35 and cuttings of D. 166/34 were also sent to the Bureau of Sugar Experiment Stations, Queensland, Australia.

84. P.O.J. 2878 now occupies 57.6 per cent. of the acreage on the Estates of the Colony. The percentage of Diamond 10 has dropped from a peak of 43.5 in 1939 to 37.1. Commercial tests with Co. 213 support the replicated plot indications that Co. 213 can be of considerable service to the industry. D. 419/33 continues to show much promise and is being commercially tested. D. 166/34 is also giving very encouraging results and some fields of it are to be seen on each estate. Co. 419 and Co. 421 are recent introductions which show much promise and there is a demand for planting material of these, D. 419/33, D. 552/33, D. 14/34 and D. 166/34. There has been a brisk demand from cane farmers for P.O.J. 2878.

85. The manurial work has mainly centred around the trial of various substitutes for ammonium sulphate, and an intensification of the work with phosphates.

86. Under the conditions of the experiments, nitrochalk, sodium nitrate and nicifos appear to give the same yields as ammonium sulphate when applied at equivalent doses. Tests of a similar nature with calcium cyanamide are under way.

87. An important table summarising the results of more than 2,000 analyses, which appeared in *Sugar Bulletin* No. 9, makes it clear that applications of ammonium sulphate affect adversely the sucrose content of the cane, the glucose ratio and the juice purity, the intensity of the effect varying directly with the rate of application. In general, however, if substantial increases in cane yield are obtained from the application the adverse effects on quality are not sufficient to offset the advantage.

Rice.

88. Importations of rice varieties during the year were twelve hybrids from Australia (only one Lady Wright x Caloro 13-3-1, germinated) and one variety, 1247-P2-7-1, from the Philippine Islands.

89. Selections were continued on the hybrids bred in 1937 and 1938. 218 fifth generation, 246 fourth generation and 20 third generation hybrids were under observation.

90. One hundred and twenty-five varieties were tested by a three-dimensional quasi-factorial design. As a result of this trial, two varieties were promoted to the replicated trials of 1941 and fifty-six were discarded. In addition progeny rows for varieties which had to be acclimatised and purified totalled seventy-two.

91. In the replicated trials, outstanding medium grain varieties were D 255 and D 256. These varieties which also did well in 1939, were sown at the end of the Autumn crop in order to procure enough seed for a large-scale milling test.

92. Among the long-grain varieties, D 259 and D 298, which were very promising in 1939 gave disappointing results. D 52-37 and D 71-37, two varieties promoted from the pseudo-factorial trial, showed much promise.

93. The non-irrigated trials yielded interesting results. While irrigation water was withheld from the plots, the severe drought which occurred during the year further emphasised the conditions of non-irrigation, and proved to be the ideal test for the inherent drought-resisting qualities of the varieties under trial. D 110 and 109 were the only varieties which stood up to the drought, while No. 79 (the standard) and D 99 failed altogether.

94. As D 110 is also one of the highest yielding varieties under irrigated conditions, this variety seems well suited for large areas of the Colony.

95. The milling difficulties of D 114, which had hitherto hampered its extension —it is the highest yielder so far developed at the Station—were successfully overcome by the Chemist. By using hot soaking at 60°C (140° F.), the "white belly" which spoils the value and increases the breakage of the milled grain, was completely eliminated.

Chemistry.

96. The Chemist acted as Deputy Director from April 11 to November 24, 1940. In May he was appointed acting Chairman of the Nutrition Committee and held this office throughout the rest of the year.

97. *Livestock and Animal Products.*—A wide range of work on livestock problems has been carried out in collaboration with the Livestock Division. The work of establishing the Ebini Experiment Station was started, although the main scheme could not be put into effect until it had been examined by the Comptroller for Development in the West Indies and his Agricultural Adviser. Management of the Rupununi Cattle Trail was taken over by this Department in June, and Mr. T. Kenyon was appointed Cattle Trail Warden and Manager, Ebini Station. Problems of pasture management play an important part in this work, and plans have been drawn up for experiments at Ebini, while the grazing paddocks on the Cattle Trail are being improved as rapidly as funds will permit.

98. 213 milk samples were analysed as part of an investigation by the Government Veterinary Surgeon on the chemical composition of milk from Creole and grade Holstein cows.

99. 30 samples of hog fats were examined in the laboratory, and information was obtained on the variation of "leaf" and "back" fat under different feeding conditions. Samples of butter, cheese, and meat meal were also analysed.

100. *Rice-milling.*—A large-scale milling trial with D 114 padi showed that the susceptibility to "white-belly" can be overcome by soaking for 18 hours in water at 60°C (140°F) prior to steaming.

101. *Fish-curing.*—A method for salting and drying local fish was published in the October number of the *Farm Journal,* after trials with Red Snapper had proved the suitability of the method. Interest has been shown in the North West District, and semi-large scale trials are now being carried out there.

102. *Tobacco.*—Visits were made with the Tobacco Officer to the Essequibo Coast, the North West District, and the Berbice River district in order to judge the suitability of the soils and climate for tobacco production. Of these, only the middle reaches of the Berbice River gave indications of being suitable for extensive tobacco cultivation.

103. Field experiments are now being carried out by the Tobacco Officer with bright leaf for cigarette manufacture. In flue-curing it was found that the use of acetylene in colouring the leaf gave promise of being of value when dealing with leaf grown on the heavy coastland soils.

104. *Soils and Fertilizers.*—The Assistant Chemist completed a lengthy investigation on the fixation of phosphate in sugar-cane soils, and he collected the results in the form of a report for distribution to local sugar chemists and for possible publication.

105. The Diamond and Leonora groups of sugar estates have recently decided to take up soil analysis as an adjunct to field trials. They were assisted by the Chemistry Division in organising their laboratory work, and analysis of the first set of soil samples was carried out by this Division. In all, 79 samples were analysed and a considerable amount of advice was given in relation to field problems.

106. *Foreshore Mud.*—Seven samples of foreshore mud were examined at the request of the Director of Public Works. These were taken from areas of "sling mud," i.e., material which is still accumulating and from old cane beds which have been under water for many years. No appreciable difference was seen between the two sets of samples, but it was interesting to find that apart from a high salt content these soils showed high fertility. Nitrogen phosphate and potash were all higher than in cultivated sugar-cane soils.

107. *Miscellaneous.*—In addition to these major investigations a number of samples were received for analysis. These included 51 water samples from the Director of Public Works, 53 samples of cane juice from a cultivation experiment at the Sugar Experiment Station irrigation water soil and rock samples and tobacco dust. Local foodstuff investigations e.g., wheat flour substitutes, preparation of dholl from pigeon peas, plantain and cassava products, also received attention.

Entomology.

108. The extreme dry weather had its effect on insect life. No serious outbreaks of insects occurred during the year.

109. *Sugar-cane.*—The long drought allowed interesting observations to be made with regard to the Amazon Fly. As recorded in the previous report up to the beginning of the drought the fly had maintained its position in the control of Diatraea and examinations made in the early part of 1939 showed parasitism averaging 40 per cent. of *Diatraea saccharalis* population on one estate on the East Coast, Demerara. During the present year examinations were made on five estates in August and early September after the drought had broken. The estates on which the examinations were made were Plantations Lusignan, Enmore Cane Grove and Nonpareil on the East Coast, Demerara, and Plantation Schoon Ord on the West Bank, Demerara. The rainfall on the estates from August, 1939, to August, 1940, when the examinations were made, was

Lusignan	...	...	54.86 inches.
Enmore	...	...	49.52 "
Cane Grove	...	...	53.70 "
Nonpareil	...	...	44.43 "
Schoon Ord	...	...	68.08 "

compared with the annual average over 60 years of 90.91 inches at Georgetown. Of a total 52 fields examined on these estates during this period, all were infested with *Diatraea saccharalis* and in 37 fields or 71.0 per cent. of the number the Amazon Fly was present. The examination of stalks showed that these were infested to the extent of 35.7 per cent. with *Diatraea* in all fields, and 25.3 per cent. in Amazon Fly positive fields. In these positive fields *Diatraea* population comprised of 37.9 per cent. *saccharalis* and 62.1 per cent. *canella.* The parasitism of *saccharalis* was in all fields 23.3 per cent. while in positive fields 42.9 per cent.

110. In the first place, therefore, the Amazon Fly has maintained its previous status and there are no indications that the value of the fly as a parasite of *Diatraea saccharalis* has diminished since its introduction; this in spite of the prolonged drought. Thus, it is evident that in British Guiana at least, the fly can adapt itself to such dry conditions.

111. *Rice.*—In some areas, after the rains came in May, there were outbreaks of caterpillars (*Laphygma frugiperda* S. & A.) on the young rice. In many instances the water was not sufficiently plentiful at the time to allow flooding of the nurseries to control the insects and it was necessary to re-sow. Broadcast rice also suffered from this pest.

112. On the West Coast, Demerara, in the Hague--La Jalousie area just before reaping there was a sharp attack of moth borer *Diatraea saccharalis* Fabr. The loss was estimated as 10 per cent. of the crop, but in individual instances was as high as 50 per cent. An examination of the position showed that some 50 per cent. of the pest was parasitised by the Amazon Fly.

113. *Coconuts.*—The Coconut Caterpillar, *Brassolis sophorae* L., continued its attacks in Georgetown as well as in Kitty Village endemically throughout the year and the usual service of notices to owners and occupiers of the premises was carried out. In most instances the work was undertaken expeditiously by the persons concerned and there was no necessity to institute proceedings against anyone.

114. The persistence of coconut caterpillar attack can be attributed, it is believed, to a large extent, to the prevailing weather conditions during the year.

115. *Other Investigations.*—Reports were received of attacks of rats, *Holochilus sciureus berbicensis* on sugar-cane at Plns. Providence, E.B., Demerara, Wales, W.B. Demerara and Blairmont, Berbice, but in no instance was serious proportions obtained.

116. *Collection and Library.*—The insect collection and Divisional Library were maintained in good condition during the year and the gradual re-arrangement of the collection continued as opportunity allowed.

117. *Plant Protection Service.*—Inspection of plants and seeds arriving in the Colony at the General Post Office, the Customs Department and on ships, were made as required and fumigation of import and export material undertaken when necessary.

C.—LIVESTOCK BRANCH.

Georgetown Stock Farm.

118. *Cattle*—The herd at December 31, 1940, was as follows:—

Breed.	Bulls.	Cows.	Heifers.	Calves.		Total.
				Bulls.	Heifers.	
Holstein ...	3	2	3	...	...	8
Guernsey ...	2	...	...	...	...	2
Red Poll ...	5	2	1	...	...	8
Hereford ...	1	2	2	...	...	5
Creoles ...	...	8	...	...	...	8
Creole x Red Poll ...	2	...	4	1	1	8
Creole x Hereford ...	3	...	...	1	2	6
	16	14	10	2	3	45

119. Ten calves were born during the year—four bulls and six heifers. A Holstein bull calf was born deformed and had to be destroyed.

120. An accute attack of tick fever occurred in June and July and one Holstein heifer, one Red Poll cow and one Hereford heifer died, within 36–48 hours. In spite of the routine treatment with injections of Sodi Cacodylate these animals died but three other cows, down with similar symptoms, responded within two hours to injections of Acaprin.

121. The Holstein, Guernsey and Red Poll bulls were bred to 325 farmers' cows.

122. *Poultry.*—The breeding section has again been increased as the demand for breeding stock is in excess of the supply. A much larger incubator is urgently required to hasten production of breeding stock for improvement work in the districts.

123. Further work was continued with local feeding stuffs of corn, rice bran and polish, broken rice, coconut meal, meat and bone meal. Results so far achieved with poultry growing and laying mashes containing 80 per cent. of local concentrates are encouraging as the average trap nest records show:

Barred Rock pullet average	...	220 eggs.
Rhode Island Red pullet average	...	214 „
Leghorn pullet average	...	204 „

The egg production for the year was 13,439; sale of cockerels for breeding purposes was 124, and 523 day old chicks were sold.

124. A poultry sub-station was started at Anna Regina, Essequibo, with 18 birds, and the station at Leguan was maintained with 19 birds.

125. *Pigs.*—The Canadian Berkshire sows produced two litters each for the year, of an average litter size of 9.6 piglets, and reared eight pigs per litter. The weight of weanlings at eight weeks old averaged 41.2 lb. Five young gilts were reared and bred at eight and a half months old so as to increase the breeding herd, 66 young pigs were sold to farmers for improving the breed of their stock.

126. Three feeding experiments were made of local rations, with weanling pigs nine weeks old of the Canadian Berkshire breed. Details of the experiment with costs have been given in several numbers of the *Farm Journal.* It showed that such pigs properly fed will average 200 lb. at six months of age and prove profitable to the producer.

Breeding Stations.

127. *La Belle Alliance–Anna Regina.*—Three pure-bred Red Poll bulls were at stud and 335 services were performed during the year. The number of half-bred Red Poll calves born was 120, of which 54 were heifers and 66 bulls. The number of farmers' cattle on agistment at December 31, 1940, was 484. The Hereford bull "Aldersend Starlight" died on January 26, and was replaced by the Red Poll "Nashes Monitor 4th." The maintenance of the pasture was rendered extremely difficult on account of the continuation of the drought. Water supplies ran out in May and farmers were forced to remove 450 head of cattle from the pasture. Rain fell again in June and by July the number of animals on agistment was back to normal. Improvements effected included the construction of a motor road into the compound and the provision of a paddock of 6 acres on the frontlands to accommodate the half-bred calves. A calf-rearing competition was held on December 19. In the preliminaries about 100 calves were examined from which 10 were selected to compete and prizes amounting to $30 were awarded. A pen of 17 pedigree Canadian Barred Rock fowls was established at Anna Regina from which hatching eggs are distributed throughout the district. A pedigree Canadian Berkshire boar was also installed for the benefit of pig-keepers in the neighbourhood.

128. *Leguan Station.*—The Guernsey bull was brought back to the Stock Farm and replaced by the bull "Candies Garbine." 39 cows were bred for the year Two pens of Barred Rock pullets and cockerels were sent to the station to supply hatching eggs for the district.

129. *Kitty Station.*—The Holstein bull served 100 cows and there is need for another bull for the district.

130. *Unity Station.*—A new station was started in this area and livestock owners are co-operating wholeheartedly. All scrub bulls in the district have been

castrated. The grade Holstein bull "Mazaruni Kerk" was sent up in June and 66 cows were bred for the year.

131. *Whim Station.*—The Red Poll bull "Knepp Pundit" was transferred to Pln. Skeldon for four months on itinerant service and was finally brought back to the Stock Farm as only 16 cows were bred for the year.

D.—AGRICULTURAL ECONOMICS, STATISTICS AND PUBLICATIONS BRANCH.

132. An economic survey of farming in the West Coast, Demerara, rice area was completed and the results prepared for publication. Perhaps the most significant conclusion drawn was that for the output and the profits to be increased attention should be paid to the owning of more working oxen by farmers. A relatively large sample was taken, returns having been obtained from over 50 per cent. of the total farming population. The results of the enquiry into the economics of cattle farming were also being analysed and studied. Records of price movements were maintained.

Publications.

133. As a war economy measure, the suspension of publication of the *Agricultural Journal of British Guiana* was continued. The *Farm Journal* continued to appear and to serve a useful purpose in disseminating information in connection with the "Grow More Food Campaign" and other activities. It is the policy to prepare articles for the *Farm Journal* in simple and popular language and the indications are that a widening circle of the farming population is being reached by this publication. As an aid in this education work the press was utilised from time to time and in this connection thanks to the Editors and management of the papers must be recorded for their helpful co-operation.

134. *Sugar Bulletin No. 9*, recording the results of another year's work of the Sugar Experiment Station, was published.

135. A paper entitled "A Simple Water Lift" by Mr. L. D. Cleare, acting Deputy Director, appeared in *Tropical Agriculture*, Vol. XVII, No. 10.

E.—CO-OPERATIVE CREDIT BANKS' BRANCH.

136. The Credit Banks which operate under the provisions of Ordinance No. 28 of 1933, continued under the chairmanship of the District Agricultural Officers. The Director of Agriculture is Chairman of the Co-operative Credit Banks Board, and the Registrar, an officer of the Department of Agriculture, is Secretary.

137. On December 31, 1940, there were thirty banks on the register. Seven of these are still in course of liquidation. At the close of the year the membership of the twenty-three functioning banks was 9,822. West Indians owned 44,704 shares and East Indians 22,168 shares out of a total issue of 72,409 shares. The paid-up capital stood at $72,408.24.

138. The lending capital of the banks is derived from two main sources—share capital and Government loans.

139. The amount borrowed from Government is $68,651 and at December 31, 1940, the balance owing on this was $12,462.68.

140. Loans are made to members only and these are chiefly small agriculturists with adequate security, raising crops of padi, sugar-cane, ground provisions, etc. Some business is also done with persons engaged in coconut-oil manufacture, pig-keeping, huckstering, gold and diamond seeking, etc. Money is also lent for the repair of buildings and for the purchase of properties. At the end of the year loans totalling $98,391.44 and interest amounting to $4,208.55 were outstanding.

141. The provision under the rules for co-operative credit banks for building up a reserve fund out of profits is fixed at 4 per centum per annnm until it equals

one-third and thereafter at 2 per centum per annum until it equals two-thirds of the paid-up capital of a bank. After utilizing the sum of $16,203.76 from Reserve in their business as provided by the rules the banks still carried in this connection at December 31, 1940, investments amounting to $23,540.67. In addition, $988.29 has been allocated for 1940 to be invested later.

142. There is a Secretaries' Guarantee Fund in connection with the banks, the value of which was $4,499.46 at year end.

Special Loans to Rice Growers.

143. In terms of the Rice Grower's Loans Ordinance, Chapter 155, Government once again made use of the co-operative credit banks for making loans to rice growers to enable them to reap, bag and transport the Autumn padi crop. The amount actually lent amounted to $14,649.

SECTION III.

BOARDS AND COMMITTEES.

144. In addition to the Executive and Legislative Councils, the Director of Agriculture served on the following Boards and/or Committees ;—

Sugar Experiment Stations' Committee (Chairman).
Advisory Board of Agriculture (Chairman).
Co-operative Credit Banks' Board (Chairman).
Food Production Committee (Chairman).
Rice Marketing Board (Member).
Central Drainage and Irrigation Board (Member).
Davson Centenary Fund Committee (Member).
Chamber of Commerce (Member).

145. The acting Deputy Director served on the first five of these Committees during the absence on leave of the Director as well as on :—

The Legislative Council.
The Rice Cultivation Committee (Deputy Chairman),

and attended the West Indian Food Conference held at the Imperial College of Tropical Agriculture, Trinidad, from April 27 to May 10, 1940.

146. The Chemist acted as Chairman of the Nutrition Committee.

147. The acting Deputy Director represents the Department on the Georgetown Allotment Committee, while the Agricultural Superintendent, Berbice, performs similar duties on the Berbice Allotment Committee.

SECTION IV.

SUMMARY OF AGRICUTURAL LEGISLATION ENACTED DURING 1940.

148. The Agricultural legislation enacted during the year included :—

1. Defence (Rice Control) (Amendment) Regulation, 1940.
2. Defence (Rice Control) (Amendment No. 2) Regulations, 1940.
3. Defence (Padi Price Control) Regulations, 1940.
4. Defence (Acquisition of Seed Padi) Regulations, 1940.
5. Defence (Rice Control) (Amendment No. 3) Regulations, 1940.
6. Defence (Rice Control) Regulations, 1940.
7. Rice-Growers Loans Ordinance Amendment Regulations, 1940.

8. Defence (Rice Control) (Amendment No. 4) Regulations, 1940.
9. Ordinance No. 13 of 1940—Ordinance further to amend the Customs Duties Ordinance, 1935, with respect to the duties payable on sweet potatoes and the exemption of certain articles from the payment of duty.
10. Defence (Suspension of the Sugar Quota Ordinance, 1937) Regulations, 1940.

J. SYDNEY DASH,
Director of Agriculture.

June 11, 1941.